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Examination	Requested
Title of Invention	Rod material for reinforced concrete structure



Abstract

The invention relates to the repair / enforcement and rod material for reinforced concrete of the concrete structure. And there is a problem that in convention, it adheres to the concrete surface by the epoxy resin paste and it reinforces to the general mortar / concrete and epoxy resin mortar after the patching repair to the steel plate or the carbon fiber seat or the aramid fiber and fiberglass sheet when conserving and reinforcing the damage of the ferroconcrete which becomes the exposure / underwater concrete structure with the different kinds degradation with the exfoliation / exfoliation. Therefore, the property of the epoxy resin paste and concrete is different and the concrete and repair part are unable to be integrated and the damage has the problem of the poisonous gas jet by the neutralization phenomenon or the fire. And moreover, the steel reinforcement for the enforcement of the Sin ChukKon key RITT structure is expanded while being heavy and being the difficulty ink and construction rusting with the rust Lee and the concrete and isolation phenomenon arise and the life is shortened since the robustness of the concrete structure is worse than with sensim. In order that the invention solves the problem described in the above, when it burns, reinforcing the damaged concrete structure of the back with construction, tunnel, the bridge, the creek covered by lid, the harbors, the chipping process, the permeate type hardener (primer) coating layer, and the aqueous acrylic polymer mortar coating layer of the high intensity (over the compressive strength 500kg / cm^2 flexural strength 100kg / cm^2) are formed, and it is the wall concrete structure, that is damaged to the reinforcing member layer, and the aqueous acrylic polymer mortar (the RE mortar ,G & W mortar) layer (the VOC subtractive underwater epoxy mortar [the U & V mortar] layer in the underwater concreting) after building the chipping process, and the high pressure washing process ,VOC subtractive underwater epoxy mortar plastering layer a castle in especially, the underwater concreting repair and reinforcement which form the repair / reinforcement to be integrated and reinforcing member of selective expansion and contraction concrete structure. By using the rod member (300) which forms the silica or the garnet on the surface into the sheet (Sheet form) consisting of the keen load (rod) (310) in *** and clip bracket (320) while being comprised of the carbon fiber, the glass fiber, and the aramid fiber, it makes integrated, or by using the one-way sheet or the rod member (300) formed into the chiasmotypy sheet as the load (rod) (310) which selectively adheres the silica or the garnet to the surface in expansion and contraction concrete masonry as the rebar dragon or the load adhering the silica or the garnet, it makes unified with the concrete structure. Therefore, 10 assignment of the steel reinforcement intensity is strong and it is light and the handling is facilitated and there is no physical property change and the rod member to the reinforcing member of the repair / enforcement of the concrete structure in which the construction of repair / expansion and contraction concrete structure is convenient and which can save the construction time and construction cost and which

comprises the strong concrete structure and can preserve at permanent form and optional expansion and contraction concrete structure are provided, it has. As to the carbon fiber, lifetime is long.



Representative Drawing(s)

Fig. 1



Description

※ Brief Explanation of the Drawing(s)

Figure 1 is a perspective view of one example implementing the reinforcement rod member of the invention

Figure 2 is a section example diagram of the load implementing the reinforcement rod member of the invention

Figure 3 is a perspective view of the load sheet implementing the reinforcement rod member of the invention

Figure 4 is a side illustration of the load sheet implementing the reinforcement rod member of the invention

Figure 5 is a perspective view of the other load sheet implementing the reinforcement rod member of the invention

Figure 6 is a section example diagram of the concrete tunnel structure which the repair / is reinforced with the invention

Figure 7 is a cross section of the other concrete ceiling structure which the repair / is reinforced with the invention

Example diagram.

Figure 8 is a cross section of the another concrete wall structure that the repair / is reinforced with the invention

Example diagram.

* *** Daehan code description *.

100: rod member 100A: one-way load sheet.

100B: chiasmotypy load sheet 110: load.

111: carbon fiber rod 112: glass fiber layer.

113: aramid fibrous layer 120: clip bracket.

121: a pair of clip 122: hole.

130: epoxy resin / acryl resin material layer 131: silica.

132: garnet 200: injured concrete tunnel.

210: damaged surface 220: permeate type hardener layer.

230: aqueous acrylic polymer mortar layer 240: rod member layer.

250: aqueous acrylic polymer mortar layer.

■ Details of the Invention

■ Purpose of the invention

● The Technical Field to which the Invention belongs and the Prior Art in that Field

The invention relates to the repair / enforcement and rod material for reinforced concrete of the concrete structure. And the construction, tunnel, the bridge, the creek covered by lid, the harbors, and the Indian millet for the repair / reinforcing member which forms the chipping process, the permeate type hardener (primer) coating layer, and the aqueous acrylic polymer mortar coating layer of the high intensity (over the compressive strength 500kg / cm^2 flexural strength 100kg / cm^2) when it burns, reinforcing the damaged concrete structure of the back with the repair /, and forms the repair / reinforcement to be integrated in the reinforcing member layer, and the aqueous acrylic polymer mortar (RE mortar, G & W mortar) layer (the VOC subtractive underwater epoxy mortar [U & V mortar] layer in the underwater concreting) in especially, the underwater concreting with the damaged wall concrete structure after building the chipping process, and the high pressure washing process, VOC subtractive underwater epoxy mortar plastering layer a castle By using the rod member (300) which forms the silica or the garnet on the surface into the sheet-like (Sheet form) consisting of the keen load (rod) (310) in *** and clip bracket (320) while 10 assignment of the steel reinforcement intensity being strong and light and the handling being facilitated and endless with physical property change and being comprised of the carbon fiber, the glass fiber, and the aramid fiber, it makes integrated, or by using the one-way sheet or the rod member (300) formed into the chiasmotypy sheet as the load (rod) (310) which selectively adheres the silica (silica sand) or the garnet to the surface in expansion and contraction concrete masonry for rebar or the load adhering the silica or the garnet, it makes unified with the concrete structure. Therefore, the rod member to the reinforcing member of the repair / enforcement of the concrete structure in which the construction of the concrete structure of the repair / enforcement is convenient and which can save the construction time and construction cost and which comprises the strong concrete structure and can preserve at the permanent form and selective expansion and contraction concrete structure are provided. As to the carbon fiber, lifetime is long.

Recently, the compressive strength of the concrete and the tensile strength of the steel reinforcement fall down to the engineering works (tunnel) structure and construction structure of the ferroconcrete to the degradation in which the concrete is the exfoliation / exfoliation / aberrant of the various including the crack etc. and it becomes influential as the social problem that the problem of the safety accident caused due to damage and crippling of the ferroconcrete, the damage of *** structure due to the corrosion of *** structure etc. is large.

The concrete has the strong alkali nature (PH=12.5) to, and the factor of the concrete degradation factor / degradation and the reinforcing rod corrosion is not progressed.

But while the neutralization phenomenon is progressed in this reinforced concrete structure due to the contraction / expansion under the penetration of the carbon dioxide / acid material / salt material (chlorine ion) and alkali aggregate reaction and weather condition in the ferroconcrete and the corrosion of the steel reinforcement is progressed, it sweeps the rust away.

And while the facility structures of cement concrete including and, this all kinds of engineering works and construction the ferroconcrete is damaged with the exposure phenomenon etc. is the local of the steel reinforcement which the steel reinforcement rusts are neutralized with the penetration of the carbon dioxide, the neutralization phenomenon of the cement concrete is accelerated and gravel not only the penetration of the carbon dioxide and the sand mixed in the cement concrete to the phenomenon, that the facility structure becomes weak to the crack phenomenon of the concrete and corrosion of the steel reinforcement is known in case of the effusive rock.

Generally when doing the repair / reinforcing construction of the engineering works underwater concrete structure about the lesion damaged to the engineering work structure, including, the concrete structure, deterioration and corrosion of the cement structure including the mortar as described above, the concrete etc. as to repair and reinforcement box, repair and reinforcement construction were constructed to the mortar, and the concrete to the epoxy resin. But even if it carried out the construction with repair and reinforcement of the concrete structure, degraded the strength degradation and the problem the repair / reinforcement was relaxed if it was unable to be integrated and the specified period passed and that repair and reinforcement function were deprived had a lot of the deterioration lesion and repair / reinforcing member.

Moreover, there is a problem that in the concrete FRP repair / reinforcing composition of the repair / reinforcing composition of the degraded concrete of prior, the coefficient of elasticity is usually small to about plastic and the glass fiber has to be avoided the place where rigidity is required with the laminated molding of the thermosetting resin for the low-pressure molding which it is done by the principal reinforcing material. It is low in the surface which is suitable for the protection of the concrete for preventing the detachment preventive structure progression of deterioration of the concrete etc. but in which the concrete and property are different and damp of the adhesive force.

There is a problem that in the composition of another example, the asystole grout cross section enforcement, it is so far widely most used as repairing method about the wall in which the steel reinforcement is exposed by the exfoliation / drop-out of the concrete according to the progressing of the coating shortage of the concrete or deterioration etc. And stalk and aftershrinkage does not occur by using the coupling material cementitious material. But the performance in which it is impossible to task in underwater and which is required to the reinforcing material is unable to be satisfied. And the peel strength which is especially, the most important element as the compressive strength / flexural strength and reinforcing material is unable to be maintained.

In the of late, the product improving the problem at repair and reinforcement construction of prior is known in prior as the admixture, which it adds in order to give the crack maintenance and waterproof agent, the coating material for caulking, and strengthening and watertight to the waterproofing coating agent, transparent light tag finishing agent, the room lubricant for anti-skid, sealant conserving and reinforces the engineering work structure, including, repair and reinforcement and iron bridge of the concrete structure, including, the ironware structure, the metal roof, including, the metal structure including the mortar as described above, the concrete etc. the room lubricant and waterproof agent, coating and adherend, the elasticity anti-rust poisonous by salt protecting coating agent, the rust processing agent etc.

And it is coating agent having the enveloped which compositions reinforcing the facility structure, and the ironware structure with the repair / coat with paint in the surface of structure of mortar concrete including this conventional all kinds of engineering works and construction, or the penetration of the carbon dioxide of airborne is delayed as the additive added in the mortar and the finishing agent finalizing structure in the facility structure of the cement concrete to the film formed in the surface and it makes the neutralization speed of the cement which is the high alkaline slow. Therefore, with anti-corrosive being given with the film formed at moreover, the ironware structure and metal structure in the surface and preventing damage while preventing the intensity maintenance of the cement concrete structure and corrosion of the steel reinforcement and supplementing the lifetime of the cement concrete structure it is known.

Moreover, the makes the neutralization delayed effect is known that the effect that is excellent in case gravel and sand of the effusive rock are put in use and the degradation of the concrete is accelerated but the economic problem embraces because of burden it has on the construction in which the cost has to be the high price and in which their composition has to select the proper product according to the degraded state of the repair / enforcement object structure and which sequentially has to carry out the construction of these products to be complicated and the construction cost is required, etc.

And the steel reinforcement is used for the architectural concrete structure, tunnel concrete structure, bridge concrete structure, creek covered by lid concrete structure, harbors concrete structure, the soldering concrete structure etc building new for the enforcement. And the pipe this steel reinforcement problem to the steel reinforcement of etc. cannot levy if while being worm-eaten with the rust, the steel reinforcement difficult that the weight is heavy and it handles and in which the rust dew intensely falls down in the long-term preservation and which is laid within especially, the invasion paper or the underwater concrete structure is expanded and the cracking shape is generated in the concrete structure and the concrete structure becomes weak and lifetime knows with . . .

● The Technical Challenges of the Invention

The present invention is to provide the rod member to the repair / enforcement of the concrete structure which it can use as the reinforcing member of the rebar for it builds expansion and contraction concrete structure it reinforces the damage part to the method facilitate simple with the repair / the concrete structure of the exposure / underwater was damaged and selective expansion and contraction concrete reinforcing member.

In order that the problems of the reinforcing members and the repair / reinforcing construction reinforced with the repair / about the concrete structure including the compo of prior etc. are resolved in order to implement the object of the present invention, it makes integrated with the reinforcement rod member used for the reinforcing member junction layer in the chipping process of the concrete structure of the repair / reinforcing material, in which the property including the peel strength / compressive strength / flexural strength / watertight / abrasion resistance / polishability / skid resistant / mode etc. is improved and exposure / invasion, the permeate type hardener (primer) application progress, the application progress of the aqueous acrylic polymer mortar, the reinforcing member soldering process, and the plastering progress of the aqueous acrylic polymer mortar (RE mortar, G&W mortar). Therefore, the repair / reinforcement is secure and it is permanent and construction is convenient and the repair / reinforcement cost and air are cut down.

It provides the repair / enforcement in which the expansion portion which is the repair / optional of the concrete structure of the exposure / invasion can be adamantly constructed and in which the flexible structure in which the particle size makes the rod member of the other silica (silica sand) or the instrument including the clip bracket the garnet is adhered the load sheet having the configuration of the configuration the one-way sheet or the chiasmotypy sheet intervene in the drawing foci key postcuring phase inversion hand and which is the repair / optional is secure and preserving the epoxy resin / acryl resin material at permanent form in the surface of the load (rod) consisting of the aramid fiber construction is convenient, the carbon fiber, and glass fiber (glassfiber) and the selective rod material for reinforced concrete, it has the purpose of another of the present invention.

● Structure & Operation of the Invention

There can be the feature in the rod member to the reinforcing member of the rebar for of in other words selective expansion and contraction concrete as the reinforcing member of the reinforcing member soldering process on the construction in which the invention relates to the repair / enforcement and the selective rod material for reinforced concrete of the concrete structure, and which the concrete structure and repair / reinforcement of the exposure / invasion utilize in the repair / enforcement of the damaged concrete structure with the chipping process, the permeate type hardener (primer) application progress, the application progress of

the aqueous acrylic polymer mortar, the reinforcing member soldering process, and the aqueous acrylic polymer mortar (RE mortar, G & W mortar) plastering progress.

There can be the feature in the repair / enforcement of the concrete structure which manufactures *** with the load sheet to the chiasmotypy sheet in the clip bracket in which a pair of clip and hole are formed with discrete with the assembling configuration or the other method it is the one-way sheet the particle size adheres the other silica (silica sand) or the garnet in the hardening phase inversion hand it dips into the epoxy resin / acryl resin material it comprises surround and the selective rod material for reinforced concrete as the load (rod) which the other feature of the present invention comprises the rod member is the aramid fiber or the glass fiber the carbon fiber rod.

There can be feature it stabilizes as the carbon fiber, which 10 complementary times is high and in which as to the another feature of the present invention, the intensity is the property of the load (rod) comprising the rod member lighter than the steel reinforcement the glass fiber, and the aramid fiber.

Specifically it is the same as that of the next time with the drawing which is the next the invention attached.

As the perspective view of one example which fig. 1 implements the reinforcement rod member of the present invention, it is comprised of the load (rod) (110) comprising this rod member (100) and the clip bracket (120) binding the load (110).

At this time, it surrounds the carbon fiber rod (111) of center to the glass fiber layer (112) or the aramid fibrous layer (113) and the load (110) described in the above comprises the load (110) in which burglar is high. And the other silica (131) or the garnet (132) is adhered to be thick and the property bond with resin or compo is enhanced.

And in the clip bracket (120) described in the above, the load (110) forming a pair of clip (121) and hole (122) into the uniform interval and adheres the silica (131) or the garnet (132) by the epoxy resin / acryl resin material layer (resin adhesive layer) (130) each is inserted and is attached in the clip (121) and the rod member (100) to the one-way sheet (100A) is comprised.

As fig. 2 is the section indication diagram of the load, it is the cannonade under the banner and the load (110) described in the above integrates the periphery of the carbon fiber rod (111) of the central part as the glass fiber layer (112) or the aramid fibrous layer (113). Therefore, it compares with the steel reinforcement of the same aperture and the weight less than the intensity of the factor of ten extent and 1/10 is maintained with the property property and the mutual complementary relation comprising each layer and the property without the degeneration of the property is maintained.

As the strabismus of the load sheet, which figs. 3 and 4 implement the reinforcement rod member of the present invention and, the side view, the load (110) adhering the clip bracket (120), forming a pair of clip (121) and hole (122) into the uniform interval and silica (131) or the garnet (132) by the epoxy resin / acryl resin material layer (130) each is inserted and is attached in the clip (121) of the clip bracket described in the above and as described above, the rod member (100) to the one-way load sheet (100A) is comprised.

As the perspective view of the other load sheet which fig. 5 implements the reinforcement rod member of the present invention, the load (110) which each inserts and attaches the load (110) adhering the clip bracket (120), forming a pair of clip (121) and hole (122) at fig. 4 like into the uniform interval and silica (131) or the garnet (132) by the resin adhesive layer (130) in the clip (121) of the clip bracket described in the above and adheres the silica (131) or the garnet (132) by the resin adhesive layer (130) about the one-way load sheet is bound to intersection and the chiasmotypy load sheet (100B) is comprised.

At this time, in the constitution of the chiasmotypy load sheet (100B) as described above, the chiasmotypy load sheet (100B) in which the load (110) omitting the clip bracket (120) to the configuration described in the above and is crossed is bound to the steel reinforcement etc. and comprising the chiasmotypy load sheet and weaving

the load (110) of the longitudinal direction and load (110) of the traverse direction like the plain of fabric and which is formed into *** direct image can be comprised.

There can be the feature in the rod member trimming off and comprising the permeate type hardener (primer) coating layer (220) with the permeate type hardener (primer) application progress and comprising the aqueous acrylic polymer mortar layer (230) with the application progress of the aqueous acrylic polymer mortar, and healthy with adhesion hole and building the rod member layer (240) the one-way rod member (100A) among the rod member (100) to the seat member soldering process, and it carries out the construction to be integrated in the plastering progress of the aqueous acrylic polymer mortar (RE mortar, G & W mortar) with the wall concrete structure in which the repair / reinforcement constructed to aqueous acrylic polymer mortar (RE mortar, G & W mortar) layer (250) (over the compressive strength 500kgf / cm^2 , flexural strength 150kgf / cm^2 , and the peel strength 25kgf / cm^2) is damaged and the repair / reinforcement is secure and it is permanent and construction is convenient and cutting down the repair / reinforcement cost and air as the chipping process the damaged surface (210) of the concrete tunnel (200) in which fig. 6 is the section example diagram of the tunnel concrete structure which the repair / is reinforced with the invention, and which the repair / reinforcing method of this tunnel concrete structure is damaged.

As described above, even if selective expansion and contraction concrete tunnel not only the repair / reinforcing construction, of the damaged concrete tunnel (200) are established, the one-way rod member (100A) among the rod member (100) of the present invention is made intervene for the rebar of prior and the concrete structure is carried out the construction of. Therefore, while being worm-eaten with the rust, the steel reinforcement difficult that the weight is heavy and it handles and in which the rust dew intensity falls down in the long-term preservation and which is laid within especially, the invasion paper or the underwater concrete structure is expanded and the cracking shape is generated in the concrete structure and the concrete structure becomes weak and problem to the steel reinforcement of the etc. in which lifetime gets better the steel reinforcement using when prior is solved. And it is convenient that the property phase weight is light and it handles and construction is convenient and it is secure and therefore the rod member (100) can preserve the researching concrete structure.

There can be the feature in the rod member trimming off and comprise the permeate type hardener (primer) coating layer (320) with the permeate type hardener (primer) application progress and comprise the aqueous acrylic polymer mortar layer (330) with the application progress of the aqueous acrylic polymer mortar, and comprises the chiasmatty rod member (100B) among the rod member (100) with the seat member soldering process with adhesion and build the rod member layer (340), and it carries out the construction to be integrated in the plastering progress of the aqueous acrylic polymer mortar (RE mortar, G & W mortar) with the ceiling surface concrete structure in which the repair / reinforcement constructed to aqueous acrylic polymer mortar (RE mortar, G & W mortar) layer (350) (over the compressive strength 500kgf / cm^2 , flexural strength 150kgf / cm^2 , and the peel strength 25kgf / cm^2) is damaged and the repair / reinforcement is secure and it is permanent and construction is convenient and cut down the repair / reinforcement cost and air as the chipping process the damaged surface (310) of the concrete ceiling (300) in which fig. 7 is the section example diagram of the ceiling concrete structure including the wall which the repair / is reinforced with the invention, and which the repair / reinforcing method of this ceiling concrete structure is damaged.

As described above, even if expansion and contraction concrete tunnel are selectively built as the repair / reinforcing construction of the damaged concrete ceiling structure (300), the one-way rod member (100A) among the rod member (100) of the present invention is made intervene for the rebar of prior and the concrete structure is carried out the construction of. Therefore, the problem generated to the steel reinforcement use which as described above, is used for prior in fig. 6 is solved. And therefore the rod member (100) can preserve the researching concrete structure with the simplicity of convenience on the property and construction.

There can be the feature in the rod member trimming off and comprising the permeate type hardener (primer) coating layer (420) with the permeate type hardener (primer) application progress and comprising the aqueous acrylic polymer mortar layer (430) with the application progress of the aqueous acrylic polymer mortar, and healthy with adhesion hole and building the rod member layer (440) the chiasmatty rod member (100B) among the rod member (100) to the seat member soldering process, and it carries out the construction to be integrated

in the plastering progress of the aqueous acrylic polymer mortar (RE mortar ,G&W mortar) with the ceiling surface concrete structure in which the repair / reinforcement constructed to aqueous acrylic polymer mortar (RE mortar ,G&W mortar) layer (450) (over the compressive strength 500kgf / cm^2 , the flexural strength 150kgf / cm^2 , and the peel strength 25kgf / cm^2) is damaged and the repair / reinforcement is secure and it is permanent and construction is convenient and cutting down the repair / reinforcement cost and air as the chipping process the damaged surface (410) of the concrete wall surface (400) in which fig. 8 is the section example diagram of the wall concrete structure that the repair / is reinforced with the invention, and that the repair / reinforcing method of this ceiling concrete structure is damaged.

As described above, even if selective expansion and contraction concrete tunnel not only the repair / reinforcing construction, of the damaged concrete wall surface (400) are established, the chiasmotypy rod member (100B) among the rod member (100) of the present invention is made intervene for the rebar of prior and the concrete structure is carried out the construction of. Therefore, the problem generated to the steel reinforcement use which as described above, is used for prior in fig. 6 is solved. And therefore the rod member (100) can preserve the researching concrete structure with the simplicity of convenience on the property and construction.

Moreover, as described above, it can perform to the damaged tunnel, the wall, the repair / reinforcing construction of the damaged bridge concrete structure not only the repair / reinforcing construction, of the ceiling concrete structure, the repair / reinforcing construction of the damaged creek covered by lid concrete structure, the repair / reinforcing construction of the damaged harbors concrete structure, the repair / reinforcing construction of the damaged soldering concrete structure etc.

And it replaces with rod member (100) including the repair / reinforcing construction, the repair / reinforcing construction of the damaged creek covered by lid concrete structure, the repair / reinforcing construction of the damaged harbors concrete structure, the one-way load sheet (100A) in the construction of selective their expansion and contraction concrete structure not only the repair / reinforcing construction, of the damaged soldering concrete structure, and the chiasmotypy load sheet (100B) of the damaged bridge concrete structure described in the above and it can carry out the construction.

■ Effects of the Invention

Since after dipping into the epoxy resin / acryl resin material while stabilizing the rod member made intervene to the aramid fiber, the carbon fiber, and the glass fiber and comprising the load (rod) in which burglar is high as the chipping process, the permeate type hardener application progress, the application progress of the aqueous acrylic polymer mortar, and the reinforcing member, when reinforcing lesion or the appointed area of the exposure / invasion concrete structure with the repair / the particle size adheres the other silica or the garnet in the hardening phase inversion hand and it uses the rod member to the one-way load sheet or the chiasmotypy load sheet as the click bracket and assembling configuration and the concrete structure and repair / reinforcement of the exposure / invasion are integrated with the plastering progress of the aqueous acrylic polymer mortar (RE mortar ,G&W mortar) and it obtains the research preservation structure water and the invention selectively makes the rod member intervene in expansion and contraction concrete structure at the same time the permanent retention effect of the concrete structure is large with convenience, the application property, and the robustness.



Scope of Claims

Claim 1 :

The repair / enforcement of the load (110) which adheres the silica or the garnet by the adhesive resin it is the reinforcing member used during the chipping process trimming the damaged surface of the damaged concrete structure off, and the construction of selective expansion and contraction concrete structure and the repair / reinforcing construction which builds the aqueous acrylic polymer mortar layer to finishing it makes the reinforcing member intervene it comprises the aqueous acrylic polymer mortar layer with the application progress of the aqueous acrylic polymer mortar it comprises the permeate type hardener (primer) coating layer with the

permeate type hardener (primer) application progress for rebar and the concrete structure characterizing the rod member (100) formed with the one-way load sheet (100A) or the chiasmatyp load sheet (100B) to the assembling configuration of the clip bracket (120) in which a pair of clip (121) are formed with equally-spaced and rod material for reinforced concrete.

Claim 2 :

The repair / enforcement and rod material for reinforced concrete of the concrete structure characterizing the rod member to the one-way load sheet (100A) consisting of the load (110) adhering the silica (131) or the garnet (132), and the assembling configuration of the clip bracket (120) or the chiasmatyp load sheet (100B) of claim 1, wherein the carbon fiber rod (111) is surrounded to the glass fiber layer (112) or the aramid fibrous layer (113) and it comprises with baculate and it is different with the epoxy resin / acrylic resin (130) to be thick, and as to the, a pair of the clip (121) and hole (122) are formed with the equal interval.

Claim 3 :

The repair / enforcement and rod material for reinforced concrete of the concrete structure which weaves with the binding string to become the load (110) adhering the silica (131) or the garnet (132) with crosswise and characterizes the rod member to the chiasmatyp load sheet (100B) of claim 1, wherein the carbon fiber rod (111) is surrounded to the glass fiber layer (112) or the aramid fibrous layer (113) and it comprises with baculate and it is different with the epoxy resin / acrylic resin (130) to be thick.

Claim 4 :

The repair / enforcement and rod material for reinforced concrete of the concrete structure characterizing the load (110) to the rod member used as the reinforcing member in which the silica (131) or the garnet (132) is adhered of claim 1, wherein it is different in surrounding with the epoxy resin / acryl resin material (130) while being the carbon fiber rod (111) comprised of the glass fiber layer (112) or the aramid fibrous layer (113) to be thick.

Claim 5 :

The repair / enforcement and rod material for reinforced concrete of the concrete structure deciding on the load (110) to the rod member used as the reinforcing member in which the silica (131) or the garnet (132) is adhered to the carbon fiber, the glass fiber layer, and the aramid fiber to the configuring feature of claims 1 and 4, wherein it is different with the epoxy resin / acryl resin material (130) to be thick.



Drawings

Fig. 1

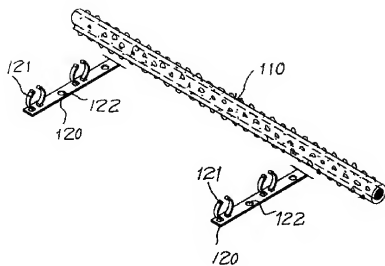


Fig. 2

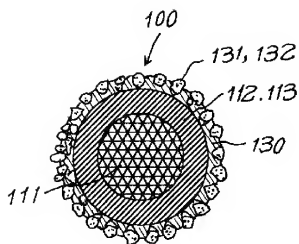


Fig. 3

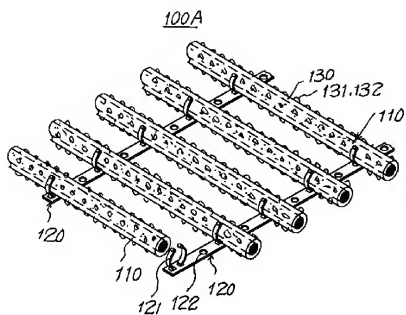


Fig. 4

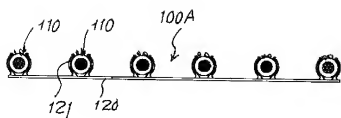


Fig. 5

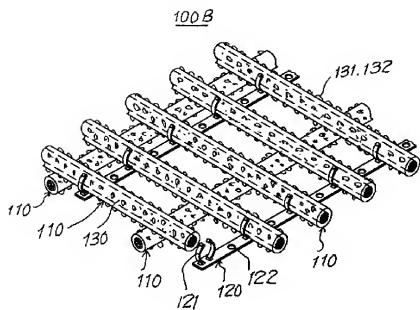


Fig. 6

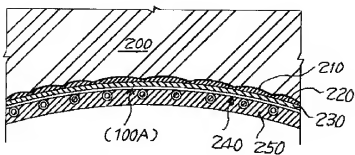


Fig. 7

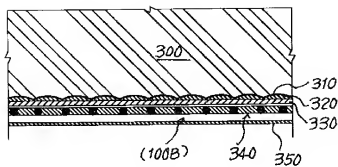


Fig. 8

